

What is claimed is:

SUB A⁸ >

1. A control apparatus for relay node duplexing, comprising: a duplexing control unit for preventing the loss of a message during exchange time period by keeping only a message transmission function in case of an active node and activating only a message receiving function in case of a standby node, when a node relaying a message by buffering is required to be exchanged, and obtaining an active right at the standby node when the exchange is completed.

2. The apparatus of claim 1, wherein the duplexing control unit comprises:

an active signal generation unit for determining the active right of the node;

an exchange reporting unit for informing the standby node that it has to prepare exchange, when duplex exchange is requested, and controlling the active node not to receive a message any more;

an exchange complete detection unit for detecting the message storing state of the TX buffer and RX buffer of the active node when the preparation for the exchange is reported, and controlling the completion of the exchange according to the result of the detection;

an exchange determination unit for determining the completion of the exchange according to the control of the exchange completion of the exchange complete detection unit and outputting the result of the determination to the active signal generation unit;

an exchange preparation unit for preparing for the exchange by controlling

the message receiving of the standby node when the exchange preparation is reported from the active node; and

an operation control unit for controlling the operation of the message receiving of the standby node according to the control of the exchange reporting unit and exchange preparation unit.

3. The method of claim 2, wherein the active signal generation unit makes its node obtain the active right if the opposite node is not in the active state.

4. The method of claim 2, wherein the exchange reporting unit controls the operation control unit so that the message transmission/receiving function of the node is inactivated, when the active signal generation unit generates a signal for giving up the active right of the node.

5. The method of claim 2, wherein the exchange reporting unit controls the operation control unit so that the message transmission/receiving function of the node is activated, when the active signal generation unit generates a signal for obtaining the active right of the node.

6. The method of claim 2, wherein the operation control unit disables the message transmission of the active node according to the control of the message transmission inactivation by means of the exchange reporting unit, in case of the active node, and enables the message receiving of the standby node according to the control of the message receiving activation by means of the exchange preparation unit, in case of the standby node.

7. The method of claim 1, wherein, if the exchange request is a power fail signal, the active node is supplied with a stable voltage for a predetermined time by the power supply even after the occurrence of power down.

8. The method of claim 7, wherein the predetermined time is longer than the time period between the power down and the generation of the exchange complete signal.

9. The method of claim 7, wherein the power supply can supply power for a predetermined time even after the power down, because it has the function of voltage charging.

10. The method of claim 1, wherein the message comprises a HDCL frame and an ethernet frame.

11. A control method for relay node duplexing, comprising:
a first step of generating a exchange start signal when an active node for relaying a message using a buffer is required to be duplex-exchanged;

a second step of performing the preparation for exchange at the active node and the standby node, respectively, when the exchange start signal is generated;

a third step of generating a exchange complete signal and becoming inactive, when the preparation for exchange is completed at the active node; and

a fourth step of activating the standby node receiving the exchange

complete signal is activated to the active state.

12. The method of claim 11, wherein the second step comprises the steps of:

5 stopping the message receiving function and keeping the message transmission function at the active node, when an exchange start signal is generated, for thereby transmitting the message already stored in the buffer of the active node before the exchange; and

10 activating the message receiving function at the standby node having received the exchange start signal, for thereby receiving a message inputted from the outside during the exchange operation.

13. The method of claim 11, wherein the third step comprises the steps of:

15 detecting the state of the buffer at the active node; and
generating an exchange complete signal, if the buffer is empty as the result of the detection and inactivating the active node.

20 14. The method of claim 11, wherein the fourth step is characterized in that: the standby node having received the exchange complete signal becomes active by activating the message transmission/receiving function for thereby completing the exchange.

25 15. The method of claim 11, wherein the message comprises a HDCL frame and an ethernet frame.

16. The method of claim 11, wherein the active node is supplied with a stable power for a predetermined time even after the occurrence of the power down, if the duplex exchange request is a power fail signal.

17. The method of claim 16, wherein the predetermined time is longer than the time period between the power down and the generation of the exchange complete signal.

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